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ABSTRACT

Interest in quantifying nonverbal variables in human interaction has led to the development and application of several nonverbal observation systems. The authors present a selective overview of these approaches, briefly explaining the major assumptions in terms of their differences and similarities. Drawing largely from their own experiences in observing and recording nonverbal behaviors, they outline some pertinent issues that recur in the observance of nonverbal communication, including the question of environment--naturalistic settings vs. laboratory settings; the amount of attention to be given to concomitant verbal behaviors; the development of categorical systems inclusive enough to classify and code every observable or potentially influential behavior; and selection of a method of recording the behavior--laboratory experiments using video-tape. (Author/LG)

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OBSERVING AND RECORDING NONVERBAL DATA IN HUMAN TRANSACTIONS

M. L. Knapp and R. P. Harrison

Academic myopia is not an unnatural or unheard of phenomenon. In fact, it is a major force in perpetuating our professional activities. As long as we can continually correct our vision--seeing things we haven't seen before--we will always be able to justify our existence. A recent[1] professional "vision" for observers of human communication goes something like this:

> Human communication behavior is composed of many dynamic processes--verbal, nonverbal, chemical, physiological and who knows what others. Having expended a great many years and a great deal of effort trying to understand the complexities of man's verbal communication system, we have increasingly found the need to observe, systematize, and record the concurrently operating nonverbal systems as well. The combined observations of verbal and nonverbal behavior will ultimately lead to a more complete understanding of human interaction.

If we adopt such a premise for our future research efforts, we are immediately faced with a number of difficult questions. What nonverbal behaviors do we look for? What methods of observation will be the most effective? What methods are most effective for analyzing nonverbal data? What recording techniques will be the most productive? To contemplate answering such questions outside of a situation-specific framework is mind-boggling. It would be analogous to receiving a questionnaire for a Ph.D. dissertation which asked the single question: "What verbal behavior should a person use?" In order to neatly sidestep the intellectual snare posed by such global considerations, we will discuss some previous attempts to observe and record nonverbal data and note some selected, but pertinent issues surrounding the development and application of nonverbal observation systems.

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[1] The term "recent" must be tempered by the knowledge that Aristotle, Darwin, and others were well aware of the importance of nonverbal variables in human interaction. However, the widespread public and professional interest in quantifying these nonverbal variables has been a relatively recent phenomenon. During the last ten years there has been a steadily increasing list of publications explicating the role of nonverbal variables in human communication.

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Previous Approaches to Observing Nonverbal Phenomena. No attempt will be made to provide an in-depth review of nonverbal observation systems. The brevity necessitated here would not do justice to the original works (which are easily obtainable), and at least one author has already attempted to summarize the major aspects of these approaches. (Knapp, 1972) Instead, we only wish to call attention to a few extant approaches to nonverbal observation, note similarities and differences, and later pose some issues and set forth some broad criteria which can be applied to the development of nonverbal category systems and the observation of nonverbal communication behavior in general.

David Efron's seminal work, Gesture and Environment, was first published in 1941. Because of the increasing interest in nonverbal behavior and because of the importance of Efron's work, it was recently republished as Gesture, Race and Culture (1972). Efron's study focused on the observation, recording, and analysis of hand and head movements--with some attention given to space and posture. Conceptually and methodologically this treatise represents the intellectual springboard for some of the later observational systems of Birdwhistell, Hall, Ekman, and others. Efron applied his observational methods to hundreds of different interactive settings, environments, and types of people; he accumulated over 2000 sketches by an artist of communicators in natural settings; and he analyzed more than 5000 feet of film from these same subjects. While the details of his observational system cannot be presented here, he was generally concerned with analyzing gestures from three major perspectives: (1) Spatio-temporal aspects--gestures considered simply as movement, independent from their interactive or referential aspects; (2) interlocutional aspects--communicational or interactive elements of gesture without regard for referential aspects; and (3) linguistic aspects--a consideration of the referential meaning of a gesture (or gestures)--including a distinction between gestures which have meaning independent of and in conjunction with speech.

Perhaps one of the earliest well-known nonverbal observational systems was put forth by Ray Birdwhistell in 1952. Twenty years later, Birdwhistell's kinesic notation system was revised and expanded in his book, Kinesics and Context. This is perhaps one of the most extensive nonverbal category

systems yet developed. Eight broad categories of nonverbal behavior are included: (1) the total head, (2) face, (3) trunk and shoulders, (4) shoulder, arm, and wrist, (5) hand and finger activity, (6) hip, upper leg, lower leg, ankle, (7) foot behavior, and (8) neck. Within each category, Bridwhistell has attempted to classify every movement and posture which may evoke "meaning" in interpersonal transactions. Pictorial notation devices (pictographs) are used to record not only movement and positions, but other "modifiers" such as stress, junctures, action modifiers, tension, relaxation, etc. Hundreds of notations are possible for filmed interaction sequences no longer than a few minutes. The difficulty in learning the coding system is probably one reason the system has not been widely applied. It is primarily used by those researchers who wish to describe the structure of the nonverbal system--in a manner similar to structural linguistics. Communicologists and social psychologists who are more concerned with the relationship of a particular nonverbal behavior (or cluster of behaviors) to other external variables such as status, acquaintance, personality, etc. generally avoid the Birdwhistell system and opt for the development of their own systems adapted to their particular research project. It should be noted, however, that the "structural approach" does provide useful information on the range of influential cues and the possible interrelationship between spoken words and kinesic behavior.

Kendon (1969), using notational sequences similar to Birdwhistell, developed a seven category system with considerably fewer behaviors to code: (1) seven possible configurations of the eyes, (2) five possible configurations of the brow and forehead area, (3) sixteen possible configurations of the mouth, (4) seven positions of the head and two of the neck, (5) three positions of the arms and hands, (6) nine positions of the shoulders and trunk, and (7) five notations for direction of gaze.

Hall (1963) used pictographs and scales in the development of his category system for field recording proxemic behavior. The eight categories which Hall believed regulated and structured the distance between interactants included: (1) six postural-sex identifiers, (2) eight angles to describe the interactional axes of the communicators, (3) a seven point continuum for the amount of touching, (4) eleven different distinctions for communication distance, (5) four distinctions to describe

various amounts and degrees of visual contact, (6) four degrees of detectable heat, (7) five degrees of detectable odor, and (8) a seven point continuum to assess voice loudness. With the exception of heat and odor, other researchers have reported success in using this category system in natural and laboratory settings (Watson, 1972). Jones (1971) modified the eight angle axes to include twelve positions--noting the need for finer discriminations to account for a greater number of possible interaction axes.

Mehrabian (1969) has used a variety of categories and recording techniques to identify behaviors associated with his tripartite concept of nonverbal semantic space--immediacy (liking/disliking), power (status), and responsiveness. A summary of his specific methods of coding is appended to this paper. An examination of his system reveals several different methods for observing and recording variables in his five categories: (1) distance, (2) relaxation, (3) movements, (4) facial expressions, and (5) verbalizations. For instance, for reclining angles coders estimate position to the nearest ten degree angle; for voice intonation, coders may make judgments on a five point scale or more precise measures may be made by a spectrum analyzer; isolated movements may be recorded by frequency, but continuous movements are coded by occurrence every five seconds; distance measures may be estimated by coders or measured precisely by floor tiles;[2] some variables are coded as either occurring or not occurring while others are scored on the basis of the degree to which the act was performed; and communication length is measured by a simple summation of total words emitted.

While the previous observational systems have necessitated a wide range of categories due to the research goals, other investigators have attempted to perfect recording techniques for specific body areas. Exline (1971), noted for his extensive research on eye behavior, positions his observers directly in front of the subject being analyzed--but behind a one-way mirror. Observers, then, are as close as possible to being in the same position as is the actual listener in the experimental laboratory.

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[2]Some proxemic researchers have devised formulas for estimating actual distance by stop-action measurements of distance on video-tapes.

During the interaction, the observer presses buttons on an event-recorder to record the amount and duration of eye contact by the subject.

Ekman et al. (1971) has developed a coding system for six emotions shown in the human face--happiness, anger, surprise, sadness, disgust, and fear. Coding is broken down into three areas of the face: (1) the brows-forehead area, (2) the eyes-lids-bridge-of-the-nose area, and (3) the lower face--including cheek-nose-mouth-chin-jaw. Photographic examples (from a wide spectrum of different types of subjects) and verbal descriptions are used to train coders to recognize the various components of each emotion--a rather unique, but important method when dealing with visual stimuli. Ekman claims high levels of accuracy can be obtained from coders after only six hours of training. In short, Ekman has developed a visual dictionary for identification of these six emotions--showing the range of possible facial configurations associated with each. When coders are confronted with brow movements associated with one emotion and mouth movements associated with another, they code this as a facial "blend". In addition, Ekman et al. (1969) has reported the use of a recording system (VID-R) which: (1) allows observers to view video-taped events at actual, slowed, or fast speed; (2) provides for coding and recall of any frame or sequence of frames quickly through the use of a computer; (3) facilitates assembly of similar or difficult to code events without destroying the original record, and (4) stores observer notations in a manner which allows automatic retrieval of the visual phenomena they refer to.

Harrison (1969) and Frahm (1970) have proposed a binary system for recording the presence or absence of verbal behavior (talking/not talking) and nonverbal behavior (gesturing or movement/unmoving). With continuous coding of both interactants, this system provides data similar to that derived from an event recorder--indicating which communication system was used, by whom, and for how long. Inferences can then be made concerning who was controlling the conversation, who was "involved", at what point the verbal or nonverbal system seemed to predominate, etc.

While the preceding nonverbal observational systems represent only a fraction of the systems available for review[3], they are sufficient to show the diversity of approaches currently being applied. Some of these category systems report inter-coder reliability and some don't; some deal with a specific part of the body and some are concerned with clusters of cues found throughout the body; scales of various lengths are used by some while others use pictographic or photographic notations; some deal with only one communicator while others gather data on both interactants; some are concerned exclusively with nonverbal dimensions while others attempt to integrate verbal and nonverbal behavior; etc. All have been used with some success to quantify portions of human interaction, but it is clear there is no category system for nonverbal observations which enjoys the same widespread acceptance achieved by Bales (1950) or Flanders (1963) for verbal behavior. The study of nonverbal observational techniques is still in an early developmental stage and most researchers continue to develop their own category systems specific to their own research orientation and research goals. Hopefully, in the long run this approach will eventually filter out useful categories and methods which, in turn, will lead to greater standardization of methods and greater integration of research findings.

In the course of our own research we have had to confront a number of pertinent issues for the development of nonverbal observational systems. In addition, we have talked to others who have used extant systems of invented new ones. As a result, we may be able to identify some problems which will save others from repeating our mistakes and hopefully move us toward conceptual and methodological refinement in our nonverbal observations.

Some Selected Issues in Observing Nonverbal Communication.[4] A typically recurring issue concerns the environment in which observations are to be

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[3]For instance, those who study vocal cues or paralanguage are indebted to G. L. Trager (1958) who provided the pioneering work on the development of an observational category system for paralanguage. A rather extensive dance notation system has been developed and may be applied to the observation and recording of human movement (Hutchinson, 1970). Nonverbal category systems for observing teacher behavior in classroom settings have been developed by Grant and Hennings (1971) and Amidon (1971).

[4]There are a number of sources which may serve as initial reference works for anyone undertaking the observation of human nonverbal behavior. (Brandt, 1972) (Knapp, 1972) (Reiss, 1971) (Weick, 1968).

made--naturalistic settings vs. laboratory settings.[5] It is clear we need nonverbal data from both contexts, but frequently those trained in speech communication choose the laboratory due to a perceived ease in variable control and manipulation. In addition, it is often easier to obtain high quality visual records in laboratory settings which are necessary for analyzing subtle movements by the interactants.

A familiar technique in such laboratory studies is to video-tape the experimental subject and attempt to standardize a confederate's behavior by instructing him to "remain neutral" or "ask exactly the same questions." Independent ratings can be used to confirm the standardization of the confederate's behavior, but such designs must also consider how accurately they describe the "process of interaction." If we only video-tape one participant in an interaction, it is difficult to make inferences about the dynamics of the process. Certainly no one would argue a confederate's behavior was exactly the same in each interview, and without dual-channel recording such changes cannot be fully accounted for. Ideally, then, we should: (1) maintain a visual record of both interactants by split screen video-recording; and (2) gather pretest data in a series of interviews without stringent interviewer control to determine the range of possible behaviors on the part of the subject. This pretesting will not only provide guidelines for what type of interviewer control is desired, but will also provide a rough guide to the limits of generalization of the findings.

Another issue confronting the nonverbal observer concerns the amount of attention given to concommitant verbal behavior. The observer trained in the study of speech communication seems particularly well-suited for observing the interrelationships between verbal and nonverbal behavior. Nonverbal behavior which repeats, contradicts, substitutes for, complements, accents, or regulates verbal behavior should all be of primary concern for the expert in speech communication. We should not attempt to correct for the long-time omission of nonverbal data in human transactions by now omitting important analyses of concurrent verbal data. The obvious implication of such a perspective is the need to develop observational

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[5] It should be noted that for some populations such as students the "laboratory" may have many of the components of a "naturalistic" environment.

category systems for both verbal and nonverbal behavior which are adaptable to co-occurrence coding. In other words, two or more verbal categories can be coded as co-occurring; verbal and nonverbal categories can be coded as co-occurring; and two or more nonverbal categories may co-occur. While the complexities of coding increases, the precision of the data also increases--and hence, our understanding of what actually occurred in a given interaction event.

This raises the question of building a category system. Obviously, the categories will vary with the topic being studied--interpersonal deception, turn-taking in conversations, leave-taking, etc. Probably initial categories will be developed by the researcher's own informal observation; examining previous studies, audio/visual records, and anecdotal reports; asking others for reports of informal observations in a wide variety of settings; and pretesting a category system in a limited number of naturalistic and laboratory settings prior to conducting the experiment. Final category refinements or additions can be made after examining the audio-visual records from the experiment itself.

For whatever behaviors being coded, the category system should be inclusive enough so that every observable (or potentially influential) behavior is classifiable. The precision of these category descriptions is another difficult, but important task. For instance, "touching" may be a behavior one wishes to code. Yet, there may be vast differences in the touch of an open palm lightly placed on the shoulder of the other interactant and the hard touch of a closed fist on the other's jaw! Hence, one not only has to be aware of possible differences in strength of touch, but place of touch, kind of touch (open or closed fist), duration of touch, and frequency of touch. The amount of category specificity is largely dependent on the research purposes and hypotheses, but nonverbal observers should at least be aware of differences that may make a difference before they start coding. Such information may have a profound impact on interpreting the data and inferences or generalizations made from the observational data. For instance, one may code the frequency of verbal reinforcers such as "Yeah," "Right," or "Uh-huh," and conclude that one party was giving a lot of support to the other. However, we know the same words can be said in a sarcastic fashion (with the addition of

certain vocal cues) which changes the interpretation completely; we also know that such verbal devices are also used to "get the floor" when conversational openings are otherwise absent.

Frequently in the development of categories, it is tempting to assume common referents for "common" behaviors. "Smiling" was one of twelve nonverbal behaviors coded by Knapp et al. (1972) in a study of interpersonal leave-taking. It was also the category which had the lowest reliability among the coders. This was because less time was spent in specifying (visually and verbally) what constituted a smile--it was assumed everyone "knew" what a smile was.

Closely intertwined with the development of categories is the method of recording the behavior(s). Efficiency is always an important criteria in recording procedures, but equally important is the criteria of accuracy. For instance, it would be efficient to simply record whether a given behavior occurred or didn't occur; however, the subtleties of some nonverbal behaviors demand scales of various lengths to record the degree to which a given behavior was performed. One must determine, for instance, whether it is important to record that a "forward lean" occurred (yes/no) or what degree of forward lean occurred (10 degree, 30 degree, 45 degree, etc.) or how long a forward lean occurred (1-5 seconds, 6-10 seconds, 11-15 seconds, etc.) or at what point in the interaction the forward lean occurred (first 10 seconds of the interaction, last 10 seconds, etc.) or all four. Such judgments can only be made in the context of a specific study, but is very tempting to select a bi-polar or three point continuum when a five or seven point scale would provide more accurate data. Nodding behavior in the previously mentioned study of interpersonal leave-taking was recorded by frequency counts. However, when Wiemann (1972) was informally observing nodding behavior in the context of conversational turn-taking, he noted the importance of a cluster of rapid-fire nods when a person was trying to "get the floor". He also noted the use of a series of slower nods with greater vertical sweep. The rapid-fire movements may be associated with an impatience or frustration in turn-requesting while the slower nods with greater vertical sweep may be a more patient, but equally dramatic way of illustrating the same need to talk. Nodding for purposes of agreement and nodding for purposes of getting a turn to talk

with a verbose person may be two different phenomena--hence, requiring different methods of recording.

The desirability of a permanent audio-visual record of the interaction(s) being studied is rarely questioned. However, several other observational issues surround the analysis of these video-tapes. We must not discount the possibility of distortion or observer error even with video-tapes.

After many hours of viewing video-tapes one sometimes gets the uneasy feeling that he is observing and recording minute behaviors which may have relatively little "real-life" impact--if any at all. You wonder whether the interacting parties are cognizant of fleeting movements which, only with the advantage of video-taped replays, are you able to observe. It is the uncomfortable knowledge that video-tapes represent something short of an accurate representation of what actually took place--but wishing it didn't. Somehow we need to obtain supplementary "natural state" feedback from interactants to determine which of these behaviors are attended to. Some authors have questioned the relevance of micromomentary facial expressions, eyebrow flashes, and pupil dilation by asking the question: "Are such behaviors perceived during everyday human interaction?" This does not suggest that such research is unimportant or even irrelevant, but raises the question of research priorities for those concerned with human communication. It reiterates the need to establish observational categories which are "meaningful" to human interaction.

Viewing tapes is a long and arduous process. For that reason, it is often the case that interaction "samples" are used for analysis. Some also argue this tends to counteract coder fatigue. Sometimes these "samples" are no more than a minute in length. Again we are faced with questions concerning the possible distorting effects on the "process". Even if the interaction samples are "representative" of the total interaction, we cannot account for what came before and after the sample used. Although this same argument could be applied to the use of complete interaction episodes, the use of episode "segments" or samples only magnifies the problem.

Another issue concerning coder viewing behavior has been stated many times, but it is worth reiterating since it is a major source of error. Harrison (1969) has labeled it "focusing" and "following" behavior. If

a coder is given a list of ten or twelve nonverbal behaviors to code which range from head movements to foot movements, it is inevitable that inter-coder reliability will suffer. To correct for this when video-tapes are used, the areas of observation can be broken down into smaller portions (e.g., head area, arm and hand movements, posture and leg movements) and coders can "focus" on that one area. The same procedure can be used to avoid another perceptual problem in coding--"following" the interaction by looking only at the talker and avoiding listener behaviors.

There are far too many problems concerning the technical use of video-tape to list, but there are numerous, frightfully easy, ways to obtain poor quality tapes without sharp resolution. Since sharp resolution of the picture is so critically important in the observation of nonverbal behavior, it is worth investigating seemingly mundane problems like the type and size of tape, type of recorder and type of playback unit which will provide the best overall quality. Finally, the type of shot can be very important. Ideally, for any given subject, it is important to get a medium-close full body shot and an extreme close-up of the face and head which can be superimposed in the upper right portion of the screen. With a straight medium close-up, anything but gross head movements are extremely difficult to observe and code--e.g., eye contact and nodding.

Conclusion. The development and application of nonverbal observational systems will certainly increase as our need to understand human communication increases. At the present time there are a number of category systems currently in use, but many investigators choose to develop their own systems designed to fit a specific study. We have drawn upon our own experiences in observing and recording nonverbal behaviors and tried to outline some pertinent issues in the process of observation. Our comments have been largely limited to a particular kind of laboratory experiment using video-tape. By no means do we purport to have provided a comprehensive summary of the extant systems nor outlined an exhaustive list of observational issues. We have only attempted to provide a "primer" for the uninitiated who may be undertaking the task of nonverbal observation in the future.

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